



... for a brighter future

APS/User Monthly Operations Meeting

J. Murray Gibson

February 27, 2008



U.S. Department
of Energy



A U.S. Department of Energy laboratory
managed by The University of Chicago

Agenda

- 2:30 p.m. Refreshments
- 2:45 p.m. APS Update – Murray Gibson
- 3:05 p.m. Electrical Inspection Update – Jim Lang
- 3:15 p.m. Users Week 2008 Preview – Tim Graber
- 3:30 p.m. APS 2007 Survey Results – Dennis Mills
- 3:45 p.m. Adjourn

Budget update

- President's budget for '09 includes an increase of \$11.51M (+11%) for APS
- \$10.9M for APS identified by DOE if a supplemental appropriation for FY'08 includes \$300M funding for the DOE Office of Science
- This will be an unpredictable year due to politics
 - Worst case scenario there is no additional money until the beginning of calendar year 2009, which will be very difficult and will mean continued reduced operating hours
 - Feeling that this is the “last chance” for the America “Competes” Act to payoff for physical sciences
- Advocacy remains vitally important

APS Renewal

- Long-term upgrade planning
 - Only LDRD this year to support R&D (accelerator and science)
 - BESAC has started study to identify new light source opportunities for the future
 - We must keep planning for the future, as it is sure to come.
- Short and medium-term planning
 - APS renewal planning underway, beamlines and accelerator
 - *Science driven*
 - *Includes everything from sustaining reliability to new beamlines and detectors*
 - *Very important that all sectors participate*
 - *Denny Mills coordinates X-Ray Science submissions, due by the end of March; Rod Gerig coordinates accelerator submissions*
- By October 20-21st workshop, we hope to have ready a plan for APS renewal
 - Will integrate short, medium and long-term renewal into one strategic plan

Task Force to evaluate Floor Coordinator workload

- University of Chicago review of APS safety program, August 2007, specifically recommended:
 - “APS management must evaluate [Floor Coordinator] workload”

- APS has charged a Task Force to consider specifically:
 - Is the current coverage sufficient to respond to a safety emergency?
 - Are Roles and Responsibilities of Floor Coordinators clearly defined?
 - Does the current arrangement meet APS goals for safe operations and scientific productivity?

- Task Force members
 - Julie Cross AES User Technical Interface
 - T. Barkalow SUF ESH/QA Coordinator
 - T. Graber APSUO Chair
 - D. Keane PUC Chair
 - J. Lang XSD-MM
 - P. Zschack XSD-MC

Task Force to evaluate Floor Coordinator workload

- Advisory Report expected March 17

- Narrow Scope of Task Force
 - Identify safety concerns
 - Clarify FC Roles & Responsibilities

- Broader goals for APS:
 - Safe Operations
 - Scientific Productivity

SPX Mini-Workshop on February 15, 2008

9:00 Welcome and Introduction

J. M. Gibson

Source and Diagnostics:

9:15 SPX Overview and Options

A. Nassiri

10:15 Performance Predictions and Tolerances for SPX

M. Borland

11:15 Short Pulse Lattice Studies

V. Sajaev

11:45 Transient Short Pulse Generation Through Beam Manipulation

K. Harkay

1:30 SPX Beam Diagnostics

B. Yang

Ultrafast science requiring picosecond sources

2:30 Condensed Matter Experiments Enabled by Picosecond X-rays

D. Reis (UM)

3:00 Why Do We Want a PS X-ray?

L. Young (ANL)

4:00 Ultrafast Structural Dynamics in Solar Energy Conversion Process

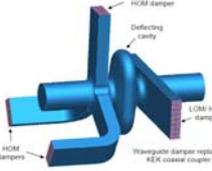
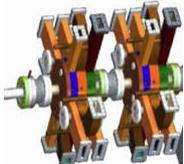
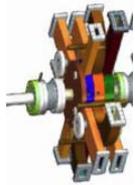
L. X. Chen (ANL)

4:30 Ultrafast Structural Probes in Nanoscience and Electronics

P. Evans (UW)

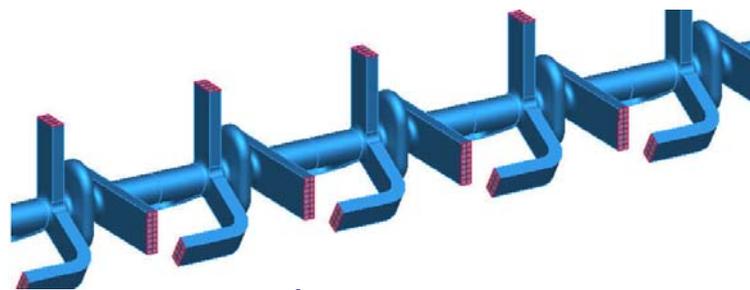
5:00 Discussion

SPX source options and specifications

Options	Operating Modes	M&S Est. Cost FY08\$ (accelerator only)	Estimated Completion Date
<p>Superconducting RF: 1 ps FWHM, 2.815 GHz More flux: flexibility R&D ongoing “Ultimate goal”</p>	<p>CW High-repetition rate 6.5 MHz in 24-bunch mode 2 sectors</p>	<p>\$12 - 14 M</p>  <p>Compact single-cell cavity / damper assembly</p>	<p>5 years from award of fund</p>
<p>RT Cavity - 1 1 ps FWHM 4 MV deflection voltage Four 3-cell cav Design work done</p>	<p>Pulsed: 120 Hz Upgradable to 1 kHz 1.25 sectors</p> <p>Only in hybrid mode</p>	<p>\$5 - 6 M ~\$1.5M (additional)</p> 	<p>2-3 years from award of fund</p>
<p>RT Cavity - 2 ~2 ps FWHM 3 MV deflection voltage Two 3-cell cavity Currently modulator limited to ~200 Hz</p>	<p>120 Hz Not upgradable 1 sector</p> <p>Only in hybrid mode</p>	<p>\$3 - 4M</p> 	<p>2-3 years from award of fund</p>

Workshop outcomes

- *The SPX source in CW mode has the distinctive advantages*
 - *Full tunability for spectroscopy experiments*
 - *High flux: 10^{11} photons/s (0.01% bw) with 1 ps pulse width*
 - *Not limited to hybrid timing mode*
 - *Can serve a different experiments than those at LCLS and FELs*
- *The SPX source in CW mode can enable the science in*
 - *Atomic, molecular and optical physics*
 - *Condensed matter physics*
 - *Photochemistry and energy-related science*
 - *Nanoscience and nanoengineering*
 - *...*
- *We have reached a consensus among the core user community*
 - *Enthusiastic about pushing the superconducting RF (CW) version forward*
 - *Upgrade optics and detectors to nurture TR community in the interim*
 - *Work out a timeline with*
 - *Detailed specification*
 - *allocation of resources, cost including beamline and undulator upgrades*
 - *To gain a strong support by a broader time-resolved community*
 - *Proposal to DOE*
 - *Supporting letters*
- *Full SPX workshop on May 9th, satellite meeting in 2008 User Week.*



Pacesetter – Lahsen Assoufid and Jun Qian (XSD)



Extraordinary effort in making surface roughness measurements for development efforts related to the LCLS, and for analyzing the data and providing timely written reports.



